

REMARKS

Claims 1-6, 9, 12, 16, and 17 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,615,380 to Kauper et al. ("Kauper").

Claims 7-8, 10-11, and 13-15 have been rejection under 35 U.S.C. § 103(a) as being unpatentable over Kauper in view of U.S. Patent No. 6,519,727 to Whetsel ("Whetsel").

Claims 1-17 remain pending.

Rejection of claims 1-6, 9, 12, 16, and 17 under 35 U.S.C. § 102(e)

With respect to claim 1, the Office Action states that Kauper discloses all of Applicants' recited elements.

Applicants' independent claim recites a method of segmenting and reconfiguring scan chains to diagnose defects in the scan chains. The method includes partitioning a plurality of serially extending scan chains into a plurality of serially arranged segments, such that each serially extending scan chain comprises a plurality of serially extending segments. The method further includes positioning a plurality of switches, having control inputs to control switching of the switches, between the plurality of segments of each scan chain. The method still further includes controlling the control inputs of the plurality of switches to connect each segment of each scan chain except an initial segment to a preceding serial segment in the same scan chain, and each segment of each scan chain except a final segment to a next serial segment in the same scan chain, or each segment of each scan chain except an initial segment to a preceding serial-adjacent segment in an adjacent scan chain, and each segment of each scan chain except a final segment to a next serial-adjacent segment in an adjacent scan chain, wherein, depending upon

the control inputs to the switches, an output of each scan segment is directed either to a next serial segment in the same scan chain or to a next serial-adjacent segment in an adjacent scan chain, and a preceding serial segment in an adjacent scan chain and the next serial segment in an adjacent scan chain are in different scan chains.

Kauper discloses that during a scan conversion, non-scan memory cells of a circuit design are replaced with scan cells to form a scan chain. The scan chain is transformed by the test synthesis tool into dynamic scan chains with the addition of reconfiguration circuitry. The reconfiguration circuitry partitions the scan chain into multiple segments and enables each segment to be selectively "bypassed" (or deactivated) during test application. Shorter test patterns that are only pertinent to one or more segments are necessary, resulting in a reduction in overall test data volume and test application time.

The Examiner cites Fig. 5 and col. 2, lines 24-27 of Kauper as teaching controlling the control inputs of the plurality of switches to connect each segment of each scan chain except an initial segment to a preceding serial segment in the same scan chain, and each segment of each scan chain except a final segment to a next serial segment in the same scan chain, or each segment of each scan chain except an initial segment to a preceding serial-adjacent segment in an adjacent scan chain, and each segment of each scan chain except a final segment to a next serial-adjacent segment in an adjacent scan chain. The Examiner further cites col. 2, lines 47-57 of Kauper as teaching depending upon the control inputs to the switches, an output of each scan segment is directed either to a next serial segment in the same scan chain or to a next serial-adjacent segment in an adjacent scan chain, and a preceding serial segment in an adjacent scan chain and the next serial segment in an adjacent scan chain are in different scan chains.

Applicants submit that the cited passages have been misinterpreted.

Figs. 4 and 5 of Kauper clearly show only single scan chains. Controlling the bypass inputs of the mux switches only connects a segment of a scan chain to a preceding serial segment in the same scan chain, and a segment of a scan chain to a next serial segment in the same scan chain. Depending on the control inputs to the mux switches, the output of a scan segment is directed to a next serial segment in the same scan chain or to a subsequent segment (bypass enabled) in the same scan chain. Nothing is taught or suggested in Kauper about controlling, or connecting to adjacent scan chains.

In contrast, Applicants' invention teaches the additional feature of controlling the control inputs of the plurality of switches to connect each segment of each scan chain except an initial segment to a preceding serial segment in the same scan chain, and each segment of each scan chain except a final segment to a next serial segment in the same scan chain, or each segment of each scan chain except an initial segment to a preceding serial-adjacent segment in an adjacent scan chain, and each segment of each scan chain except a final segment to a next serial-adjacent segment in an adjacent scan chain. Depending on the control inputs to the switches, an output of each scan segment is directed either to a next serial segment in the same scan chain or to a next serial-adjacent segment in an adjacent scan chain, and a preceding serial segment in an adjacent scan chain and the next serial segment in an adjacent scan chain are in different scan chains. Applicants' recited configuration is clearly shown in Applicants' Fig. 1 and described on page 5, paragraph 1 of Applicants' specification.

In view of the foregoing, it is respectfully submitted that Kauper does not teach or suggest the subject matter recited in Applicants' amended independent claim 1 as this reference fails at least to teach or suggest controlling the control inputs of the plurality of switches to connect each segment of each scan chain except an initial segment to a preceding serial segment

in the same scan chain, and each segment of each scan chain except a final segment to a next serial segment in the same scan chain, or each segment of each scan chain except an initial segment to a preceding serial-adjacent segment in an adjacent scan chain, and each segment of each scan chain except a final segment to a next serial-adjacent segment in an adjacent scan chain, wherein, depending upon the control inputs to the switches, an output of each scan segment is directed either to a next serial segment in the same scan chain or to a next serial-adjacent segment in an adjacent scan chain, and a preceding serial segment in an adjacent scan chain and the next serial segment in an adjacent scan chain are in different scan chains.

Claims 1-6, 9, 12, 16, and 17, which depend directly or indirectly from independent claim 1, incorporate all of the limitations of independent claim 1 and are therefore patentably distinct over Kauper for at least those reasons provided for claim 1.

Rejection of claims 7-8, 10-11, and 13-15 under 35 U.S.C. § 103(a)

The Office Action states that the combination of Kauper and Whetsel discloses all of Applicants' recited elements.

Kauper has been discussed previously and does not teach or suggest the subject matter of Applicants' amended independent claim 1. Further, because Kauper does not teach or suggest the subject matter recited in independent claim 1, and because Whetsel does not teach or suggest the elements of claim 1 that Kauper is missing, Whetsel is irrelevant.

Claims 7-8, 10-11, and 13-15, which depend directly or indirectly from independent claim 1, incorporate all of the limitations of independent claim 1 and are therefore patentably distinct over Kauper and Whetsel for at least those reasons provided for claim 1.

Conclusion

In view of the foregoing, Applicants respectfully request reconsideration, withdrawal of all rejections, and allowance of all pending claims in due course.

Respectfully submitted,



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